

WHAT IS CLAIMED IS:

1. A multiple channel communication system comprising:
 - a plurality of network communication ports;
 - a plurality of communication devices, wherein each communication device is coupled to a respective one of the plurality of network communication ports; and
 - an autonegotiation controller coupled to and shared by the plurality of communication devices.
2. The multiple channel communication system of claim 1 wherein the autonegotiation controller comprises:
 - means for sequentially autonegotiating communication configuration information through the plurality of communication devices, one of the communication devices at a time.
3. The multiple channel communication system of claim 2 wherein the means for sequentially autonegotiating comprises:
 - means for maintaining an autonegotiation status register having a plurality of status flags, wherein each status flag corresponds to one of the plurality of communication devices and indicates whether autonegotiation is required for that communication device; and
 - means for periodically polling the autonegotiation status register and for autonegotiating the communication

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configuration information in a predetermined sequential order through each of the communication devices for which the corresponding status flag indicates autonegotiation is required.

4. The multiple channel communication system of claim 1 wherein the autonegotiation controller comprises means for maintaining, for each of the plurality of communication devices, a Media Independent Interface (MII) control register, an MII status register, an autonegotiation advertisement register, an autonegotiation link partner ability register, an autonegotiation expansion register and an autonegotiation next page transmit register.

5. The multiple channel communication system of claim 1 wherein the multiple channel communication system is disposed within a single integrated circuit.

6. The multiple channel communication system of claim 1 and further comprising:

a plurality of local area network link partners; and

a network medium operably coupled between each network communication port and a corresponding one of the local area network link partners.

7. The multiple channel communication system of claim 1 wherein each communication device comprises an Ethernet communication device and each network communication port comprises an Ethernet communication port.

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defining a sequential order for
autonegotiating each of the
communication devices;

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maintaining a plurality of autonegotiation status indicators, wherein each autonegotiation status indicator corresponds to one of the plurality of communication devices and indicates whether autonegotiation is required for that communication device; and

selectively autonegotiating the communication configuration information through each of the plurality of communication devices in the sequential order based on whether the corresponding autonegotiation status indicator indicates autonegotiation is required.

9. The method of claim 8 wherein selectively autonegotiating comprises selectively autonegotiating the communication configuration information with a single autonegotiation controller which is shared by the plurality of communication devices.

10. The method of claim 8 wherein selectively autonegotiating comprises:

polling the plurality of autonegotiation
status indicators in the sequential
order;

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after each autonegotiation status indicator
    is polled and before the next
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autonegotiation status indicator is polled, autonegotiating the communication configuration information through the corresponding communication device if the polled autonegotiation status indicator indicates that autonegotiation is required; and periodically repeating the steps of polling and autonegotiating.

11. The method of claim 8 wherein selectively autonegotiating comprises:

autonegotiating the communication configuration information through a first of the plurality of communication devices in the sequential order if the corresponding autonegotiation status indicator indicates that autonegotiation is required;

ceasing communication through the first communication device for a predetermined period of time prior to autonegotiating the communication information through the first communication device;

autonegotiating the communication configuration information through a second of the plurality of communication devices in the sequential order, after completing the step of autonegotiating communication information through the first communication device, if the autonegotiation status indicator corresponding to the second

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communication device indicates that autonegotiation is required; and selectively ceasing communication through the second communication device for the predetermined period of time prior to autonegotiating the communication information through the second communication device.

12. The method of claim 11 wherein the step of selectively ceasing communication through the second communication device comprises:

ceasing communication through the second communication device for the predetermined period of time only if the autonegotiation status indicator corresponding to the second communication device changed autonegotiation status from not requiring autonegotiation to requiring autonegotiation during the step of autonegotiating the communication configuration information through the first communication device.

13. The method of claim 8 wherein:
the step of maintaining a plurality of autonegotiation status indicators comprises maintaining a first multiple-bit autonegotiation status register, wherein each bit indicates whether autonegotiation is required for a corresponding one of the communication devices; and

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the step of selectively autonegotiating comprises:

polling a bit in the first autonegotiation status register that corresponds to a first of the communication devices;

initiating a break link timer which measures a predetermined period of time if the polled bit indicates autonegotiation is required for the first communication device;

copying each bit of the first multiple-bit autonegotiation status register into a second multiple-bit autonegotiation status register each time the break link timer is initiated;

ceasing communication through the first communication device during the predetermined period of time measured by the break link timer;

autonegotiating through the first communication device after ceasing communication through the first communication device;

autonegotiating through a subsequent one of the communication devices in the sequential order after autonegotiating through the first communication device if the corresponding bit in the first autonegotiation status register indicates autonegotiation is

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required for the subsequent communication device;
re-initiating the break link timer if the bit in the first autonegotiation status register corresponding to the subsequent communication device indicates autonegotiation is required and the bit in the second autonegotiation status register corresponding to the subsequent communication device indicates autonegotiation is not required; and
ceasing communication through the second communication device for the predetermined period of time prior to autonegotiating through the second communication device only if the break link timer is re-initiated.

14. A multiple channel communication system comprising:

first and second local area network ports;
first network communication means for communicating through the first local area network port;

second network communication means for communicating through the second local area network port;

autonegotiation control means coupled to the first and second network communication means for providing sequential

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autonegotiation through the first and second network communication means; and media access control means coupled to the first and second network communication means and the autonegotiation control means for controlling operation of the first and second network communication means and the autonegotiation control means.

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